TEACHING CHILD-CARE SKILLS TO MOTHERS WITH DEVELOPMENTAL DISABILITIES

MAURICE A. FELDMAN

SURREY PLACE CENTRE AND THE UNIVERSITY OF TORONTO

AND

Laurie Case, Maria Garrick, Wanda MacIntyre-Grande, Jayne Carnwell, and Bruce Sparks

SURREY PLACE CENTRE

The present study identified and remediated child-care skill deficits in parents with developmental disabilities to reduce their risk of child neglect. Eleven mothers with developmental disabilities who were considered by social service and child welfare agencies to be providing neglectful child care were found in baseline to have several important child-care skill deficits (e.g., bathing, diaper rash treatment, cleaning baby bottles) compared to nonhandicapped mothers. Parent training (consisting of verbal instructions, pictorial manuals, modeling, feedback, and reinforcement) resulted in rapid acquisition and maintenance of child-care skills in all mothers. Mean percentage correct scores increased from 58% in baseline to 90% in training and 91% in follow-up (M=31 weeks). The latter two scores compare favorably to the mean score (87%) of 20 nonhandicapped mothers on the same skills. Where observable, parent training was associated with corresponding benefits to the children (e.g., elimination of diaper rash and cradle cap, increased weight gain, successful toilet training). These results indicate that parent training may be a viable option to the removal of the child from the home when parenting skill deficits place the child's well-being in jeopardy.

DESCRIPTORS: parent training, mentally retarded parents, child-care skills, child neglect

Children of parents with developmental disabilities are at risk for neglectful care, environmentally related developmental delay, and behavior problems (Feldman, Case, Towns, & Betel, 1985; Garber, 1988; O'Neill, 1985; Walton-Allen & Feldman, 1990). The children are routinely removed from home, often without signs of maltreatment, based on the commonly held assumption that parents with borderline and mild mental retardation have cognitive deficits that impede their ability to raise children adequately (Hayman, 1990; Hertz, 1979; Wald, 1975). Indeed, a follow-up study of referrals to a family court clinic found that only 17% of parents with developmental disabilities

maintained custody of their children (Seagull & Scheurer, 1986).

Recent judicial decisions have upheld the rights of persons with handicaps to raise children and have called for the provision of appropriate services (Vogel, 1987). Reviewers of the research on parenting by persons with mental retardation generally consider parenting problems in this population to be remediable skill deficits and agree that many of these families could benefit from specialized community support and parent training (Budd & Greenspan, 1984; Feldman, 1986; Haavik & Menninger, 1981; Kaminer, Jedrysek, & Soles, 1981; Murphy, Coleman, & Abel, 1984; Tymchuk & Feldman, 1991).

Studies have shown that parents with developmental disabilities can be taught to increase (a) positive and stimulating parent—child interactions (Feldman, Case, Rincover, Towns, & Betel, 1989; Feldman et al., 1986; Peterson, Robinson, & Littman, 1983; Slater, 1986), (b) grocery shopping and menu planning skills (Sarber, Halasz, Mess-

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mer, Bickett, & Lutzker, 1983), (c) home safety and cleanliness (Tymchuk, Hamada, Andron, & Anderson, 1990; Watson-Perczel, Lutzker, Greene, & McGimpsey, 1988), (d) effective decision-making and problem-solving skills (Tymchuk, Andron, & Rahbar, 1988), and (e) child behavior management skills (Ducharme & Feldman, 1990; Fantuzzo, Wray, Hall, Goins, & Azar, 1986).

Despite the recent increase in training studies, an overlooked area of concern is teaching crucial newborn- and infant-care skills to parents with developmental disabilities whose skill deficits may place their children's well-being and survival in jeopardy. For example, failure to treat diaper rash can result in chronic irritation, infection, and considerable pain. An unsafe sleeping environment increases risk of death and injury due to suffocation, falls, and plummeting objects. Improper cleaning of baby bottles can lead to digestive tract infections, and inappropriate feeding techniques can result in insufficient caloric intake, food refusal, and colic.

This study evaluated a child-care training package (instructions, pictorial manuals, modeling, feedback, and tangible reinforcement) for mothers with developmental disabilities whose young children were experiencing (or were at risk for) neglect. We also observed a comparison group of nonhandicapped parents with children of similar ages to (a) determine the degree and pervasiveness of parenting skill deficits in the parents with developmental disabilities, (b) develop realistic training goals, and (c) socially validate training effects.

METHOD

Participants

Mothers with developmental disabilities. Eleven Caucasian mothers with developmental disabilities voluntarily participated in this study. To be eligible, the mothers were required to have (a) an IQ of less than 80 (the tests were given by independent assessors using the Wechsler Adult Intelligence Scales—Revised); (b) a previous independent diagnosis of mental retardation (usually made by school psychologists when the participants were

children or adolescents); (c) a referral by their advocates, pediatricians, public health nurses, or child welfare workers who were concerned that the mothers' disabilities contraindicated adequate child care (there were no concerns regarding physical, sexual, or substance abuse); and (d) full-time custody of their children. Their mean age was 26 years (range, 21 to 39) and their mean IQ was 74 (range, 68 to 79). None of the mothers suffered from any known syndrome or brain injury associated with intellectual limitations. Eight mothers were married, 7 were receiving welfare, and 5 lived in subsidized housing. Only one family was not monitored by child protection agencies. Their children were 6 boys and 5 girls with a mean age of 9 months (range, 3 to 36). Eight children showed delays in cognitive development (i.e., had scored at least one standard deviation below the mean on the Mental Development Index of the Bayley Scales of Infant Development, Bayley, 1969). None of these children had obvious birth defects, diseases, or recognized syndromes that could account for their delays.

Nondisabled mothers. To facilitate the identification of weak skills in the mothers with developmental disabilities and the setting of reasonable performance objectives, a sample of nonhandicapped mothers also was observed. This comparison group consisted of 20 mothers of low and middle socioeconomic status (annual family incomes ranged from C\$6,500 to C\$75,000) who had nonhandicapped infants similar in age to the children in the target group. These mothers were recruited at daycare centers or through colleagues; all those asked agreed to participate in the study. The mean age of these mothers was 31 years (range, 22 to 42). Eighteen were Caucasian, 1 was Black, and 1 was Asian. Maternal IQ scores were not ascertained, but based on educational background, none appeared to have learning problems; all had graduated with academic high school diplomas, and 13 had obtained university degrees. None of these mothers had educational or occupational experiences specific to early childhood education or public health nursing (which may have given them special knowledge about child care). Two were single mothers, 14

Subject	Cleaning baby bottles	Bathing child	Toilet training	Treating cradle cap	Formula prepara- tion	Treating diaper rash	Crib and sleep safety
Belinda	X				X		
Maureen		X	X				
Amy	X					X	
Dawn	X	X					
Darla	X						
Carol		X					
Doris	X						
Toni	X						
Sarah	X			X			X
Betty	X	X					
Karen		X	X	X			
Mean percentage correct for nondisabled mothers (n)	84% (6)	91.4% (13)	N/A	N/A	96.7% (4)	71% (6)	87.8% (13)

Table 1
Skills Trained and Means of Nonhandicapped Comparison Group

had 1 child, and 6 had 2 children. The observed children included 9 boys and 12 girls, ranging in age from 4 to 27 months.

Skills Trained

The child-care skills that were observed in baseline were chosen based on referral concerns, parents' requests, informal observations during initial visits, and the age of the child. Each mother received training in skills for which she had received a mean baseline score below 80% (the approximate mean of the nonhandicapped comparison group). This individualized approach meant that the mothers received training in varying numbers (one to three) and kinds of skills. The skills trained for each mother are listed in Table 1, along with the mean skill score (when available) of the nonhandicapped comparison mothers group. Each skill was task analyzed, reviewed, and in some cases revised by pediatric health-care professionals. Examples of several task analyses are provided in Table 2 (detailed definitions of each step were provided to the observers and are available on request).

Dependent Measure, Recording, and Interobserver Agreement

Correct performance on each step of each task analysis was recorded through direct observation of mother and child. To be scored correct, the mother

had to perform the step as described in the task analysis without any instruction, prompting, or assistance from the trainer. Failure to perform the step as specified was considered incorrect. If the exact sequence in the task analysis was not required to complete the task accurately, then flexibility in performing steps out of order was allowed. For example, in cleaning baby bottles (see Table 2), after soaking in soapy water (Step 5), it did not matter whether the mother brush-cleaned the bottles (Steps 6 and 7) or nipples (Step 8) first as long as the individual steps were performed correctly. On the other hand, if she cleaned the bottles before soaking them in soapy water, then she would be scored incorrect on Step 5, but she could still be scored correct on Steps 6 and 7. A few steps that could not be readily observed during the visit were scored based on the mother's verbal response to a question (e.g., "what should you do if the diaper rash gets worse?"; correct answer: "call the doctor"). The percentage correct score on the whole task was calculated by dividing the number of steps performed correctly by the total number of steps and multiplying by 100%.

To make the observations as natural as possible, the observers visited the mothers when they typically would conduct the child-care task(s); each visit lasted about 90 min. Occasionally, if the observer determined that the mother did not intend to per-

Table 2
Examples of Child-Care Task Analyses

A. Cleaning baby bottles

- 1. Accumulates bottles
- 2. Removes nipple caps
- 3. Rinses bottles with water
- 4. Half-fills sink with warm, soapy water
- 5. Soaks bottles and nipples for at least 2 min
- 6. Cleans inside each bottle with bottle brush
- 7. Cleans inside rim of each bottle with brush
- 8. Cleans inside and rim of each nipple and cap with brush tip
- 9. Inspects bottles and nipples for milk residue
- Drains soapy water and fills sink with fresh warm water
- Rinses bottles and nipples in water until clear of soap and residue
- 12. Removes bottles and nipples from sink and places on clean surface

B. Bathing

- 1. Gathers supplies
- 2. Bathes in safe place*
- Fills tub to safe water level (if baby <1 year, water level below mother's thumb joint; if baby >1 year, water level below wrist)⁴
- 4. Checks that water temperature is lukewarm, and adds more warm or cool water as necessary*
- 5. Holds baby securely while placing baby in water^a
- 6. Tilts baby back to wash hair
- 7. Wets hair with washcloth, cup, or cupped hand
- 8. Places small amount of baby shampoo or soap on hand
- 9. Rubs shampoo gently onto baby's scalp
- Rinses hair thoroughly with washcloth, cup, or cupped hand
- 11. While rinsing, places hand across baby's forehead to shield baby's face
- 12. Soaps own hands or washcloth
- 13. Washes behind baby's ears
- 14. Washes baby's body
- 15. Washes baby's creases
- 16. Turns baby and washes baby's bottom
- 17. Rinses soap off with clean washcloth, cup, or cupped hands
- 18. Lifts baby out of tub carefully
- Dries baby gently but thoroughly, especially in creases
- 20. Wraps baby in dry towel or dresses immediately
- 21. If using baby powder, shakes on hand away from baby
- 22. Holds and handles baby in comfortable secure manner (if baby cannot sit, holds baby for entire bath; if baby can sit, holds baby if he or she stands)*
- 23. Remains beside baby throughout entire bath
- 24. Smiles and talks to baby during bath

form the particular chore during the visit, the observer asked the mother to engage in the task (e.g., "I would like to watch you clean baby bottles before I leave"). This procedure was followed throughout all phases of the study with all mothers. The same procedure was followed with the nonhandicapped comparison mothers, except only one observation was made per skill. As the primary observers were usually the parent trainers, they were not naive regarding which group each mother belonged to or to the skills being trained.

Interobserver agreement of the trainers' scoring of the mothers' performance was made on 14% of the observations across all participants and conditions by a second nonnaive observer, who scored the performance independently. Agreement was calculated for each step of the task analysis per each skill and was defined as both observers scoring correct or both scoring incorrect for a particular step; a disagreement occurred when one observer scored correct and the other observer scored incorrect for a step. A separate analysis was also made of correct responses on "safety steps," that is, steps necessary to ensure the safety of the child (e.g., staying close to the baby while he or she is on the changing table). Overall interobserver agreement was computed as the number of agreements divided by the number of agreements plus disagreements multiplied by 100%, and was 91.7% (range, 69% to 100%) on all steps and 87% (range, 83% to 94%) on the safety steps.

The primary observer also recorded the presence or absence of diaper rash and cradle cap, monitored the children's rate of weight gain, and for the older children, observed their toileting skills; these observations were corroborated by family physicians and nurses (diaper rash, cradle cap, and weight) or the parents and child welfare workers (toileting skills).

Experimental Design

A multiple baseline design across skills and across the mothers with developmental disabilities was used to evaluate the effects of parent training on the mothers' child-care skills. A within-subject multiple baseline design, across sequentially trained

^{*} Safety step.

skills, was used with Sarah, Maureen, Belinda, Amy, and Dawn.

Procedure

Baseline. The mothers were observed in their own homes conducting the to-be-trained tasks. No instructions or training were provided; they were simply told to "do what you usually do." The number of baseline sessions varied from one to six, depending on the urgency for training, the mother's request to start training, and scheduling or design constraints.

Training. Training sessions were conducted weekly in the mother's home and consisted of verbal instructions, modeling, physical guidance, feedback, reinforcement, and pictorial manuals (available only for crib and sleep safety, bathing, and treating diaper rash). When a manual was available, each training session started with the trainer asking the mother to read each step of the task analysis out loud (if the mother was having trouble reading on her own, the trainer would read to her), and to describe the corresponding picture in her own words. The mother then carried out the childcare task, and if she did not execute a step, the trainer would verbally prompt the mother to do it (e.g., "don't forget to wash the baby's hair"). If a step was performed incorrectly, the trainer modeled that step only, explaining what she was doing and the reason for it (e.g., "it's important to shake out the baby powder away from the baby so she does not breathe it in and get sick"). The trainer also provided feedback consisting of specific verbal praise (e.g., "that's great, you remembered to put on the diaper rash cream!") and correction (e.g., "rinse the bottles until all the soap is gone"). Immediately following a session, if the mother met a predetermined criterion, she then received a coupon exchangeable for a variety of tangible items (e.g., toys, diapers, public transit tokens, perfume) that she had previously selected. The initial criterion required that she score higher than the preceding session, until she reached a criterion of 80% correct. In subsequent sessions, she received a coupon only when scoring at least 80%.

Although the length of the visits was about 90

min, the actual time spent in training varied, depending on the type and number of skills being trained. For example, training was sometimes conducted on only one skill (e.g., Darla, Carol, Doris, and Toni) and would last as long as it took to do the task (e.g., a training session in cleaning baby bottles generally took about 10 min); at other times several skills were covered during one visit (e.g., Sarah, Betty, and Karen). When not engaged in training, the parent trainer discussed other topics with the mother that were unrelated to the skills being trained (e.g., finding a job, family issues, community resources). Because all the mothers had phones (although they were occasionally disconnected due to nonpayment), the trainer called between visits to confirm the next scheduled appoint-

Follow-up. When the mother reached a criterion of 100% on the safety steps and at least 80% on the remaining steps over three consecutive sessions, her intensive training was terminated and her follow-up phase began. Occasionally, at the trainer's discretion, training was extended beyond the criterion of three consecutive sessions to promote maintenance through overlearning. As in baseline, no instructions, prompting, modeling, or immediate feedback were provided during skill performance. The mother was prompted only to perform the previously trained child-care task if the trainer determined that the mother had not planned to do the task. The mother was allowed to keep any of the manuals she had received, but the trainer made no further mention of them in follow-up. Eight of the trained mothers received a reinforced maintenance procedure wherein the schedule for awarding the coupons for maintenance of criterion performance gradually was thinned by switching to a lottery system. If the mother met criterion on a follow-up probe, she had the opportunity to win a coupon if she correctly guessed the number of a roll of a die; the number of guesses allowed (and hence the odds) decreased over sessions from six of six to two of six (at which point the lottery was stopped). For the remaining 2 mothers (1 mother was unavailable for follow-up) the coupon reinforcement procedure was stopped abruptly at the start of follow-up. Across all mother/skill combinations, follow-up lasted a mean of 31 weeks (range, 4 to 74 weeks) with a total of 71 maintenance probes conducted across 10 mothers. As in training, phone calls were made to remind the mother of an upcoming follow-up visit. Several mothers (Belinda, Doris, Toni, and Betty) remained in our program and received training in other areas of parenting such as parent—child interactions (e.g., Feldman et al., 1986, 1989) and child behavior management (Ducharme & Feldman, 1990).

RESULTS

Overall, all mothers improved their child-care skills as a result of training. For all 11 mothers and 20 skills, the mean percentage correct performance of skill steps increased from 58% in baseline to 90% in training; performance was maintained at a mean of 91% in follow-up, and all mothers continued to perform the safety steps 100% of the time. The training and follow-up results compared favorably to the performance of the nonhandicapped mothers, whose mean score was 87% on the same set of skills.

Figures 1 and 2 depict the percentage correct performance on the designated target skills for each mother. The multiple baseline data are presented in real time. Figure 1 depicts the results of the mothers who started training between Weeks 10 and 83, and Figure 2 shows the results for mothers who started training between Weeks 106 and 182. Both Maureen's and Belinda's baselines averaged between 50% and 70% correct on two skills apiece. Training resulted in rapid increases to 85% to 100%; these were maintained in follow-up at levels near the means of the nonhandicapped mothers (see Table 1). Similar results were obtained with the other mothers. Follow-up indicated high levels of maintenance among the mothers who had the lottery (Sarah, Belinda, Amy, Dawn, Betty, Doris, Toni, and Darla; M = 91.3%) and the 2 who did not (Maureen and Carol; M = 94.3%).

Importantly, training in treating diaper rash and cradle cap was associated with elimination of these afflictions in Amy's, Sarah's, and Karen's children (because her child had a susceptibility to diaper rash, Amy's skills were monitored in follow-up using a doll to determine whether she would remember what to do if the rash reappeared). Training in formula preparation was related to increased rate of weight gain in Belinda's initially low-weight "nonorganic failure-to-thrive" baby to the point that the physician was no longer concerned about the baby's nourishment. Finally, upon receiving instruction in toilet training, Maureen completely toilet trained her child in 2 weeks, whereas Karen was able to train her child partially over a 13-week period (subsequently her child entered day care and was toilet trained there). Although these observations should be interpreted cautiously in the absence of formal reliability checks, improvements also were confirmed by the children's physicians, nurses, and other workers who visited the families.

At a mean of 17 months (range, 3 to 38) after the termination of training, we were able to locate and interview (in person) 6 of the 11 mothers and solicit their opinions regarding their participation in the program. All the mothers responded "yes" to the following questions: (a) Do you think what you learned was good for your child?, (b) Do you think you are a better parent because of being in the program?, (c) Did you like your Parent Education Therapist?, (d) Did you like the Parent Education Program?, and (e) Would you recommend this program to other parents? Only Maureen said "no" to the question, Did you like the way you were taught to (skill)?, with regard to toilet training. Only Toni said "no" to the question, Do you think you do (skill) better after being taught?, with regard to cleaning bottles (interestingly, both Maureen and Toni successfully learned these skills).

DISCUSSION

The present study expands the knowledge base and the assessment and training technology in the overlooked area of care of newborns, infants, and toddlers by parents with developmental disabilities. The baseline percentage correct scores of crucial child-care skills among the 11 mothers with developmental disabilities were considerably lower than

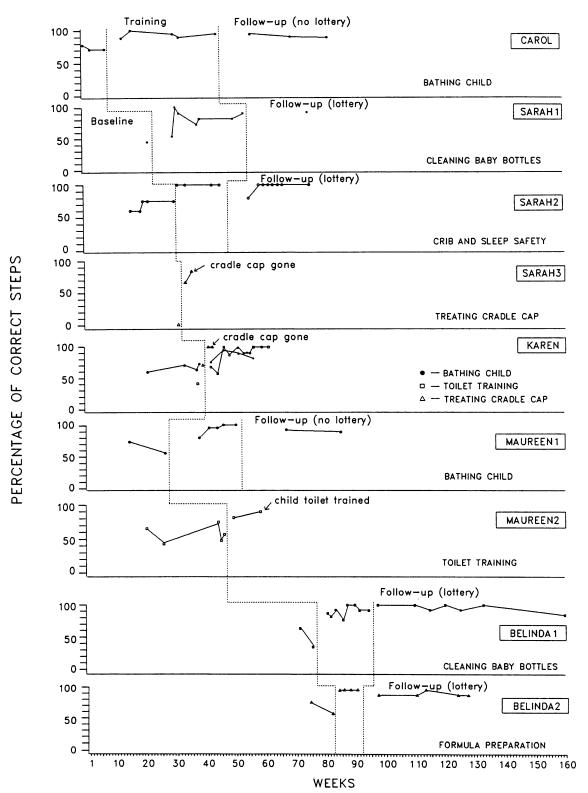


Figure 1. Percentage of correct steps on trained child-care tasks for Carol, Sarah, Karen, Maureen, and Belinda in baseline, training, and follow-up conditions.

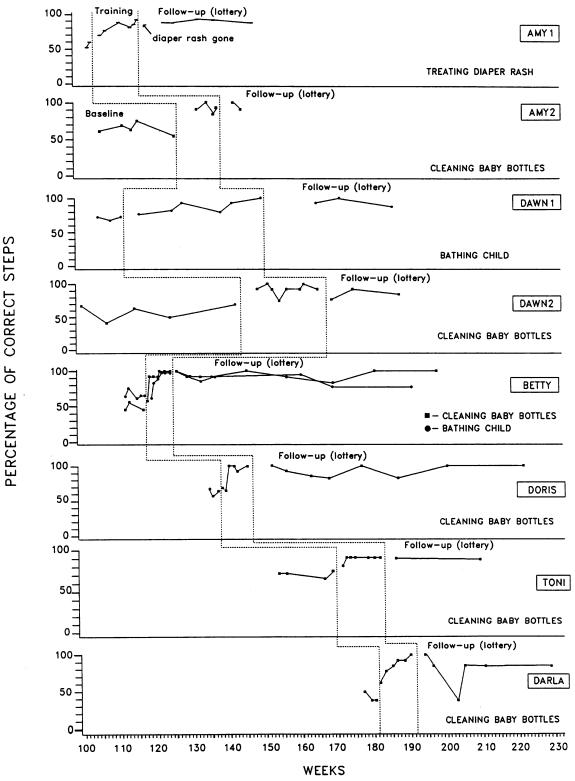


Figure 2. Percentage of correct steps on trained child-care tasks for Amy, Dawn, Betty, Doris, Toni, and Darla in baseline, training, and follow-up conditions.

those of the nonhandicapped comparison mothers (who also made numerous errors). This comparative information was important for identifying areas in need of training, establishing realistic training criteria, and evaluating intervention effectiveness. We found that parent training (consisting of instructions, pictorial manuals, modeling, feedback, and reinforcement) was effective in increasing a variety of parenting skills with corresponding benefits to the children.

Unlike previous studies in which parents with mental retardation were taught to increase their positive interactions with their children (e.g., Feldman et al., 1986, 1989; Peterson et al., 1983), this study focused on teaching parents child-care skills. These newly acquired skills were well maintained, with or without a lottery-based reward system. Due to an insufficient number of subjects, the effectiveness of the lottery system in follow-up could not be evaluated adequately. Future studies should determine whether different types of parenting skills are associated with varying degrees of maintenance, and whether strategies such as the lottery used in this study would be beneficial when parents are having difficulty sustaining criterion performance (e.g., Feldman et al., 1989).

Because this was a field study, certain ethical and logistical constraints compromised the rigor of the experimental design and the extent of followup. In particular, when the child's health and/or safety were endangered, training commenced following one baseline probe (e.g., Sarah and Karen, treating cradle cap). Baselines also were shortened due to mothers' requests to initiate training (e.g., Sarah, cleaning baby bottles; Karen, toilet training). Thus, it was not always possible to conduct sufficiently overlapping baseline and training sessions both within and across all subjects to preserve the multiple baseline designs. Likewise, the considerable variability in follow-up reflects the realities of working with these families, because in some cases we lost contact with them when they moved (e.g., Dawn) or the skills were no longer relevant as the child aged (e.g., when the child started drinking from a cup all the time; Toni). Sometimes the observer (usually the original trainer) and parent

were unable to coordinate mutually suitable times for follow-up visits. This was a problem particularly if the mother started working or attending a day program and the child was placed in day care (e.g., Karen). In total, 14% of scheduled follow-up visits were canceled by the parents (often without advance notice). Despite these design limitations, our confidence in the effectiveness of training is bolstered by the fact that all 11 mothers increased and maintained all the trained skills.

The group of mothers with developmental disabilities in this study was previously identified by social service workers as questionable parents because of their disabilities. Thus, the results of this study may not be generalizable to all parents with developmental disabilities (i.e., those not involved in the social service system). However, the data do suggest that parents who initially come to the attention of the child welfare system because they are mentally retarded may often need and benefit from training in crucial child-care skills. It is noteworthy that the two skills most frequently in need of training were related to cleanliness: cleaning baby bottles (8 mothers) and bathing the infant (5 mothers).

Our program is able to offer intensive in-home training weekly, which may not be feasible for other services with more limited resources. Perhaps more efficient training could be provided via group instruction, potential self-learning devices (such as the pictorial child-care manuals used for four skills in this study), or through videotapes. Although the effectiveness of group instruction with parents who are developmentally disabled has received some support (Feldman et al., 1986), the viability of self-instructional materials alone in teaching parenting skills to this population remains to be determined.

An accumulating body of research (e.g., Feldman et al., 1986, 1989; Slater, 1986; Tymchuk et al., 1988) indicates that although children of parents with developmental disabilities may be in jeopardy for maltreatment due to parental skill deficits, this risk may be attenuated through parent training. Demonstrations of effective parenting programs belie the notion that parents with developmental disabilities are not responsive to such ser-

vices (Seagull & Scheurer, 1986). In many cases parent training may be a more viable, effective, inexpensive, and humanitarian option to foster care, with its attendant problems (Finkelstein, 1980; Wald, 1975). Furthermore, dissemination of effective programs should help remove the onus of failure from the parents and encourage child protection workers and judges to evaluate the quality of the available services before concluding that the parents are incapable of benefiting from instruction because of their disabilities.

Parent education alone should not be seen as a panacea. Many of these parents have problems other than skill deficits that may affect their parenting style, such as the stigma of being mentally retarded, a history of abuse, lack of social support, depression, and poverty. Several concurrent interventions (e.g., individual/marital counseling, social skills training) and other support services (e.g., advocates, child protection supervision) may be necessary to reduce the likelihood of child maltreatment and promote not only appropriate child care, nurturance, and development, but also parental physical and psychological health (Tymchuk & Feldman, 1991; Walton-Allen & Feldman, 1991).

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